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variation in temper, or if the distribution of heat be very irregular and the changes of temperature abrupt." However, this, to me, is only partial and does not touch the root of the matter—a molecular dissymmetry.

Perhaps this comment is totally uncalled for, but as there are already so many apparently different phenomena and "effects," in physics, it is well, when we can, to ascribe all modifications of any effect, that are manifestly due to the same principle, to that effect, instead of setting it down as a new phenomenon.

W. R. TURNBULL.

Ithaca, N. Y.

Birds Singing on Their Nests.

IT is one of the encouraging hopes in natural science that taking anything for granted is giving way to facts. It is but a few years ago when one of our popular ornithologists said that birds were silent on their nests, else it would betray their nests. I had never seen anything in print to the contrary, up to 1886, when I discovered the nest of a white-eyed vireo from hearing the song proceed from one direction. I cautiously followed it, to find the bird on the nest. And here I may say I saw the male and female change places on the nest about noon every fifteen or twenty minutes; the male singing all the time on the nest as heartily as when off it. In February, 1892, I communicated these facts to the *Ornithologist and Oölogist*. It came out in "Bird Notes" in March, 1892, after which several correspondents from widely differing localities testified to hearing other species of vireos and the black-headed grosbeak of California singing on the nest.

In the April number of the *Ornithologist and Oölogist*, 1892, Clyde L. Keller writes: "It seems to be a trait peculiar to that family (vireos). I have observed both cassius and the western warbling vireo singing on their nests." In the next month, May, Mr. S. R. Ingersoll writes: "Let me add both the red-eyed and warbling vireos singing on their nests, especially the latter variety" (speaking of the eastern warbling vireo). This takes in so many of the vireos that it is probable all the family have this peculiarity. One may at first wonder that it was so long undiscovered. I think the solution lies in the fact that all these birds I hear of not being silent on the nests are all birds that have their nests well concealed. I had looked many years in vain for a goldfinch's nest before I could find one, till my ears helped me. Passing by a tree several times a day, I heard the voice of a female in the tree answering the call of a passing male. After searching some time I discovered her sitting on her nest, as well concealed as a goldfinch knows how to do it, so that the risk of betraying the nest is not great, with such birds as we now know to sing on their nests.

HENRY HALES.

Ridgewood, N. J.

Effects of Weather on Scientific Work.

VERY few persons recognize the sources of error that come directly from atmospheric conditions on experimenters and observers and others. In my own case I have been amazed at the faulty deductions and misconceptions which were made in damp, foggy weather, or on days in which the air was charged with electricity and thunder storms were impending. What seemed clear to me at these times appeared later to be filled with error. An actuary in a large insurance company is obliged to stop work at such times, finding that he makes so many mistakes which he is only conscious of later that his work is useless. In a large factory from ten to twenty per cent less work is brought out on damp days and days of threatening storm. The superintendent in receiving orders to be delivered at a certain time takes this factor into calculation. There is a theory among many persons in the fire

insurance business that in states of depressing atmosphere greater carelessness exists and more fires follow. Engineers of railway locomotives have some curious theories of trouble, accidents and increased dangers in such periods, attributing it to the machinery. These are common illustrations and can be confirmed in the experience of all thoughtful observers. If some one would gather up reliable facts and tabulate them in this field, no doubt some laws of mental activity would be found. In an inquiry among active brain workers in my circle I find a settled conviction that many very powerful forces coming from what is popularly called the weather control the work and its success of each one. The psychology of the weather should be a most pregnant new land for study, and I would be pleased to hear from any one who may have some personal experience on this topic, for the purpose of making some future studies for the readers of *Science*.

T. D. CROTHERS, M.D.

Hartford, Conn.

A Freak of Inflorescence.

AMONG several hyncinths blooming in the window there is one which reverses the usual order of inflorescence. Its first spike of flowers was normal, that is, indeterminate, but the second began to bloom at the top, its lowest blossoms opening about the same time as the upper ones on the first spike. A spike on another plant began near the middle to open its flowers, and continued the process in both directions.

My observation of "late-blooming trees" has been that generally the second blossoming occurs only when the normal action of the tree has been in some way thwarted. A number of Duchesse pear trees blooming so early as frequently to get touched by frost are almost sure to bear clusters of blossoms the following August. A Siberian crab, in one of its off years, bore in July several clusters of flowers. These were larger than the ordinary flowers, and nearly as double as a Baltimore Belle rose. The summer flowers of the pear trees, on the contrary, are generally not so large, nor so many in a cluster as the spring flowers.

LUCY A. OSBAND.

Ypsilanti, Mich.

Maya Hieroglyphs.—A Correction.

In my first article on the "Interpretation of Maya Hieroglyphs by their Phonetic Elements" (*Science*, Dec. 15, 1893), p. 325, 2d col., 3d line from bottom, for 162 read 102; p. 327, 2d col., 5th line, for 123 read 125; 43d line, for 136 read 128, 129; p. 328, 1st col., 32d line, for mout read mouth; 4th line from bottom, for 84 read 86; 20th line from bottom, for 166 read 167; 21st line from bottom, for 165 read 166; fig. 35 should have been given in the illustration, but was omitted from the drawing sent. It is composed of three squares, similar to those given in fig. 128, and has the phonetic value xa v/s, sha v/s, cha v/s.

H. T. CRESSON.

The Native Calendar of Central America and Mexico.

In *Science*, Feb. 2, and also in the *American Anthropologist* for January, Dr. Cyrus Thomas publishes some observations on the above subject, bearing upon my recent work, "The Native Calendar of Central America and Mexico" (Philadelphia, 1893). As Dr. Thomas is evidently under some misapprehensions as to my statements, I beg to place them in a somewhat clearer light.

In the *Anthropologist* he undertakes to correct some of my quotations from the writings of Dr. Ed. Seler; but from his own words, it is plain that Dr. Thomas is very

imperfectly acquainted with the writings of that distinguished antiquary. For instance, the name of the fifth day in the Maya calendar is *chicchan*, which in one of his articles, published in 1888, Dr. Seler derives from *can*, serpent, and *chi*, to bite; but in a later paper, published in 1891, he retracts this etymology, and says, "Jetzt ist es mir zweifellos, dass es *chic-chaan*, d. h., 'tomado señal,' 'tomado aguero,' bedeuten soll." Dr. Thomas, unacquainted with the latter article, asserts that my quotations were not correct, and questions the translation. It is good for reviewers, as well as writers, to keep themselves acquainted with the current literature of their own special branches.

Dr. Thomas also objects to my interpretations of the Maya month names from religious ceremonies held at certain seasons, stating that it is "totally different from the method by which the names of the months of other calendars were obtained";—entirely overlooking the fact (for I cannot suppose he is ignorant of it) that the Nahuatl month-names are recognized by all to have been derived just in this way.

In his letter to *Science*, Dr. Thomas fails to grasp Mrs. Nuttall's theory. There is no fixed relation of the ceremonial year of 260 days to each civil solar year of 365 days; but in a cycle of exactly 37 solar years, 13,515 days, the two calendars coincide; and there is certainly some evidence that this cycle was noted and celebrated by both Mayas and Mexicans. We may well leave, however, further discussion of this intricate subject till the appearance of Mrs. Nuttall's work, now in course of publication by the Peabody Museum of Archæology.

The analogies which Dr. Thomas endeavors to point out in favor of a Polynesian origin of the calendar are not impressive. For instance, 8 months, 232 days, surely does not "correspond somewhat closely with the sacred period of the Mexican calendar," which was 260 days. Nor is it easy to see why it is such a "singular fact," that the Javanese, like the Mexicans, had a five days' week, since both employed the quinary method of enumeration. As to the Hawaiian system, Dr. Thomas is quite right in speaking of the accounts of it as "in evident confusion"; therefore the less we base analogies upon it, the more creditable will be our caution.

D. G. BRINTON.

Philadelphia.

Mining Exhibits at Chicago.

THE anonymous writer of the article entitled, "The Columbian and the Centennial Expositions," in *Science* of Feb. 2, we think unjustly criticizes the exhibits of the Mining Building. It is evident that the writer, in common with probably nine-tenths of the visitors, has passed judgment on the exhibit as a whole by examining merely those parts of it which were displayed on the ground floor. To a lover of educational features in the exhibit nothing could arouse greater regret than that so vast an amount of space on the ground floor was devoted to "great piles of rocks and ores utterly without system" and to the veritable storage of practically worthless, unlabeled material in expensive showcases, as for example in the wretched Mexican display. Your correspondent most justly condemns such waste of space, but when he attempts to score "the rest" of the exhibits, it is very easy to see that he overlooks the gallery exhibits, which in educational value far exceeded any at the Centennial. In Philadelphia exhibits of considerable interest, but of no scientific value, were scattered through several buildings; and the "Mining Annex," itself an afterthought, and added to the main building merely to supply the demand for space, contained little that was comparable even to the exhibits on the ground floor of the Chicago Mining

Building. The elaborate, and on a whole excellent, metallurgical display in the west gallery, though defective, had no competitor at the Centennial; the most instructive Coke-exhibit, the admirable abrasive exhibit, the large floor chart of the coal fields of the United States, and the collections of building stones all in the east gallery and the grand display of oils in the north gallery, the mere decoration of which we understand cost \$65,000, are not even mentioned by your correspondent, and probably he never ascended the tiresome stairways which led up to the real mecca of the few who desired to study the educational exhibits in the Mining Building. Nor is mention made of the great systematic collections of minerals and rocks displayed respectively in the east and west galleries. It is worth noting that every specimen in two of these collections was labeled with its species, crystallographic form, chemical formula and locality, and so mounted as to clearly display the label, which in one collection was invariably a printed one. These systematic collections were unquestionably the best labeled, most complete and scientific, ever shown at any World's Fair. Two fine displays of gems in the rough and cut, in the west gallery, are also overlooked. It is easy to find fault, but far better, in our judgment, to discern merits, and as a mineralogist who visited the Centennial more than a score of times and spent six months at the Columbian Exposition, the opinion here expressed that the mining exhibit at Chicago far exceeded that at Philadelphia may coincide within the unwritten opinion of many a mineralogist.

GEO. L. ENGLISH.

New York.

BOOK REVIEWS.

Histories of American Schools for the Deaf, 1817-1893.
Edited by EDWARD A. FAY. 3 vols., octavo. Washington, D. C., The Volta Bureau.

THE historical sketches contained in these goodly volumes were prepared for the Columbian anniversary, the enterprise having been first suggested in December, 1892. They give accounts of all the schools for the deaf that have been established in the United States, Canada and Mexico, most of the histories having been prepared by the heads of the various schools or by persons designated by them, several of the writers being deaf themselves. The different articles of which the work consists are printed and paged separately, the printing in many cases having been done by pupils or graduates of the schools, and the volumes are profusely illustrated with portraits and other pictures. Most of the schools are public, and supported in whole or in part by the state; but private and denominational institutions are also included, the whole number of schools dealt with being seventy-nine in the United States, seven in Canada and one in Mexico. Besides the histories of the various schools, these volumes contain an introduction by the editor, an account of several conferences of the instructors and also of the American Association to Promote the Teaching of Speech to the Deaf, together with many statistical and personal items pertaining to the general subject.

Of the schools whose origin and history are here recounted, the greatest interest naturally attaches to the earliest ones and to those which at a later time introduced the system of oral teaching. The editor in his introductory note alludes to the first establishment of the European schools for the deaf, which were the models of our own; and the opening chapters of the first volume describe the founding of the first two American schools, the American Asylum at Hartford, which was opened in 1817, and the New York Institution, which originated independently the following year. The remainder of the